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Chair

Mr. James Maloney

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● (1110)

[*English*]

The Chair (Mr. James Maloney (Etobicoke—Lakeshore, Lib.)): Good morning, everybody. Thank you for joining us. I apologize for starting a little bit late, but some of us had some things in the House to attend to.

We're carrying on with our study on forests pests and invasive species. We have two witnesses in the first hour. We have Gail Wallin, who is chair of the board of the Canadian Council on Invasive Species; and David MacLean, professor at the University of New Brunswick.

Thank you both for joining us. The process is that each of you will be given up to 10 minutes to make a presentation, and that will be followed by questions from around the table.

Mr. MacLean, you can start.

Professor David MacLean (Emeritus Professor, University of New Brunswick, As an Individual): Good morning, everybody. Thanks for the invitation to come here.

I'll just tell you a little bit about myself first. I'm an emeritus professor at the University of New Brunswick in the faculty of forestry and environmental management. I joined UNB as dean in 1999, and before that, I spent 21 years with the Canadian Forest Service working on the spruce budworm's effects on forest. My background is forest ecology, not forest entomology. I look at budworm from the forest's standpoint rather than from the insect's standpoint. I have 40 years of experience now. I began my career on the Cape Breton Highlands in 1978, when a huge budworm outbreak ended up killing 87% of the fir trees in 30 plots that we maintained across the highlands.

I'm also the lead scientist of the Healthy Forest Partnership, which I believe you heard about in a previous session. There's an early intervention spruce budworm research project going on in New Brunswick right now. I'll speak more about that a little later.

I thought I'd start off with a little bit of background about spruce budworm. These are five facts about budworm.

It's a native insect. It has evolved with our balsam fir and spruce forests. To some extent, it serves the same ecological function that forest fires serve with Jack pine, which is a recycling of stands. It kills off the overstorey trees and there's often the advanced regeneration of balsam fir, at least in some areas, or of intolerant hardwood species, which are underneath and ready to take over when the stand recycles.

Budworm larvae strongly prefer to eat the new shoots. They really only eat the new shoots. They do this repeatedly year after year, and outbreaks typically last about 10 years. Trees start to die after about four or five years. The real problem with budworm outbreaks is the huge amount of mortality that results in certain stand types. My rules of thumb are to expect 85% mortality in older balsam fir stands, expect 35% to 40% mortality in older spruce stands—and by "older" I mean 50- to 60-year-old mature ones—and expect the same with young fir.

For the trees that survive, there's also stemwood growth production that's going on as well. Probably about 90% of the stemwood production is reduced during periods of active defoliation.

Although budworm fir forests can be viewed as ecologically resilient—it will come back from it, it's not destroyed—from an economic standpoint it's devastating because of this huge amount of mortality that occurs.

In research at the University of New Brunswick, a couple of Ph.D. students working on both the timber supply effects of outbreaks and the socio-economic effects of those timber supplies projected a cost of up to $15.3 billion over the next 40 years if an outbreak similar to what happened in Cape Breton in the 1970s were to occur now. This translates into 57,000 person-years of lost employment and mill closures that would result from this. There would be about a one-third reduction in annual allowable cut.

We do have very accurate models and decision support systems for spruce budworm because there has been interest in this insect for a long time. They've been in development since the early 1990s.

There are essentially five management options for dealing with a spruce budworm outbreak.

The first option is to do nothing and to just accept the mortality that will occur.

The second option is silviculture before an outbreak to try to restructure the forest to reduce the most damaging stand types. This focuses on reducing balsam fir. It's definitely the one that is killed the most.

The third option is to salvage during an outbreak or after the outbreak. You have a narrow time window with that. You only have two to four years or so when the trees are still usable. It's tricky because the trees don't all die at once. They die over a period of time. Also, it's usually happening over huge areas so logistically it's very difficult to make a big effect through salvage.

The fourth option is foliage protection by using biological insecticides. We're not using chemicals at all now. Bacillus thuringiensis and tebufenozide are two biologically acting insecticides that could be used. In the past, they would have been used in a reactive sense to keep trees alive. They'd let defoliation happen for at least two years and then start spraying to keep the trees alive.

The fifth option is an early intervention strategy. We really don't know for sure that it will work, but after four years of trials it has been working so far. This is also an insecticide application, but it's done way earlier in the outbreak, before you start to see defoliation occurring.

The Healthy Forest Partnership is a consortium that's been running this early intervention strategy project. Phase one was from 2014 to 2018—$18 million, with $10 million coming through the Atlantic Canada Opportunities Agency and a number of others. Then phase two was approved by the federal government in the last budget, with $75 million through Natural Resources Canada, with a 60:40 funding match, so an additional 40% is required from provinces and industry across Atlantic Canada.

What is the early intervention strategy? It really comes down to a very simple concept: intensive monitoring and early detection of hot spots when populations are just beginning to rise, so with approximately 2,000 sample points across northern New Brunswick with three trees sampled in each of the public points. This is really intensive monitoring. Then there is small-area, targeted, biological pesticide application to reduce the populations in those hot spots.

The third element of it is research on tools and techniques to try to disrupt budworm moth mating and migration. There is a big outbreak going on in Quebec right now. We periodically get influxes of moths from Quebec.

Evidence so far after four years of treatment suggests that the early intervention strategy appears to be working. Our target is to keep populations below seven larvae per branch. The second instar larvae stage is the overwintering stage. They are really tiny, but they are the ones that will grow to do the feeding in the following summer. We're doing this much earlier than previous treatments. We're treating with insecticides all areas that have budworm, regardless of land ownership. The provincial regulations are such that an individual landowner can opt out if they choose. There's a very sophisticated contact and communication with landowners to inform them of what's going on and why. So far we've had about 2% of private landowners opt out across the four years. It requires a very strong provincial commitment and communications component.

We've been treating increasing areas over the period. It was about 5,000 hectares in the very first year, in 2014, and it was up to 225,000 hectares in 2018, this past year. Budworm populations in the treated blocks have been consistently reduced by about 70% through our treatments.

In general, areas are not being treated in successive years. The areas that were treated in 2017 typically weren't treated again in 2018. Following four years of treatments, the Quebec-New Brunswick border is evident from the air. You can fly over it and see the defoliation on the Quebec side and not on the New Brunswick side. Aerial surveys flying aircraft over to detect defoliation detected 2,500 hectares of defoliation in New Brunswick in 2017, and only 500 hectares in 2018, in comparison with 2.5 million hectares in Gaspésie and Baie-St.-Laurent, immediately on the other side of the border. In the budworm population, the second instar larvae populations are much higher in adjacent Quebec than in New Brunswick.

The key successes so far are reducing budworm populations, and the innovative science with broad, practical applications. There's a very successful public engagement and citizen science component to the program. We've really been trying to get out ahead with communications by talking to mayors, town councils, individual landowners and the media in the affected areas. We've been avoiding serious defoliation in the wood supply losses, and we've developed a unique and powerful partnership among industry, universities, governments and communities.

I have five recommendations of what can be done to protect the Canadian forest sector from the spread of forest pests, which is your mandate.

The first one I would state is to support Natural Resources Canada's Canadian Forest Service science program because CFS has the largest entomology expertise for dealing with native and introduced forest insects in Canada.

The second is somewhat self-serving, but I say continue to support the Healthy Forest Partnership early intervention strategy research project. We're very grateful to the federal government for the funding that has been provided for this. This is the first attempt anywhere to conduct, area-wide within the province of New Brunswick, population management of a native insect. One of my colleagues calls it whack-a-mole. They are starting to come up here, and we whack them back down with the insecticide treatment.

● (1115)

My third recommendation is to seek input from provinces and industry on what their most important forest pest problems are and to require innovative research approaches to pest management, not just business-as-usual approaches. All federal funding to protect the Canadian forest sector should be in partnership with the provinces.

My fourth recondition is to use the Healthy Forest Partnership as a model for other innovative research partnerships with provinces, researchers, communities and universities. We currently have over 20 partners. As a sub-thought to that, it's critical that provinces be onside and be committed to their required contributions. With a 60:40 funding split, it doesn't work if the provinces aren't onside. Communication is really important.

My last point is that one important area that is difficult to research on meaningful temporal and spatial scales, because it requires very large areas and long time periods, is the use of silviculture and forest management to change the forest landscape to reduce future pest outbreaks. This is a specific area where the federal government resources, in partnership with industry and provinces, could help with the establishment of some long-term forest landscape restructuring studies.

Thank you.

● (1120)

The Chair: Thank you, Professor.

Ms. Wallin.

Ms. Gail Wallin (Chair, Canadian Council on Invasive Species): Thank you.

I'm chair of the Canadian Council on Invasive Species. It's an organization that was established about 10 years ago as a result of a national invasive species forum that called for an out-of-government, national voice for invasive species, except the term, "invasive species" wasn't so often used at that time; it was called many different things.

I'm the chair of that board. I hail from the home of the mountain pine beetle in central B.C., and I have been at the front edges of B. C., northeast B.C. and Alberta, as we've talked about keeping it out of this area, so I'm very familiar with that discussion. I know that's not popular here, but I've lived and breathed this for the last 10 years.

The Canadian Council is a federally registered, non-profit organization. It has a board of directors that is representative from coast to coast to coast. Its mandate, its format, its direction came from not just the first national invasive species forum in Canada, but the successive ones because they provided that direction. It's a non-profit, four-chamber board, so it has federal, provincial and territorial governments on it, industry, businesses, the indigenous, and it has chapters of the provincial and territorial invasive species councils that exist in Canada.

That's the model of the board. There are two main drivers for the board and for the council: pathways and partnerships. You'll see those two themes throughout. When we talk about invasive species, based on the national invasive alien species strategy, that normally means outside Canada or outside a region; it's foreign to that area. The federal government has defined that term.

I'm going to talk for just a couple of minutes about the Canadian council and then I'm going to talk about our recommendations to you, as a standing committee. I talked about our main themes. We've done a number of things. We've held a number of national invasive species forums; we held the first North American invasive species forum here in Ottawa about three years ago in partnership with the federal government. The forum rotates among Canada, the States and Mexico. We've also had a number of national workshops where we drilled down on some of the key themes, such as mapping invasive species so that people can have access to knowing where the forest pests are in Canada; the aquatic invasive species; and how we can share data better, both across and beyond governments.

We facilitated the North American invasive species framework, which now Environment Canada, Mexico and the United States are working on. We've developed a range of other programs such as national outreach campaigns because we all know that for invasive species prevention, it's important to have the Canadians on side.

As we take a look at how we move forward when we talk about forest pests, I looked at a number of the other presentations you've had. You've had lots of information about the economic impacts; I think that's a given. You know that forest pests cause a huge economic loss to us at an urban and a rural level. At the beginning, people thought forest pests were just that rural forest thing; they didn't realize they applied to the urban environment, and that's wrong. Forest pests are a major theme for urban forests also.

The other part I want to raise on behalf of the Canadian council is that we look at it not just as an economic issue, but as an environmental issue. Healthy forests are important for Canada from the biodiversity side, which we're pretty proud of in Canada, and also species at risk. Very few species at risk strategies don't list invasive species as a top threat that's causing the decline. If we take the economic and the environmental risk, invasive species, forest pests are a huge issue. They affect our trade. We put in place a lot of trade regulations, and a lot of regulations are put on in Canada to reduce the spread.

Recognizing that you probably already have a good handle on the impacts, I'm going to talk about what we think are some of the things that need to be addressed from a forest pest side. I'm going to end up with five specific actions. First, for all invasive species including forest pests, economically and environmentally the best thing by far is prevention, stopping that species from getting into that region or that country. Once it's there, the second step is to have an early response and quickly eradicate it. If you don't do that immediately, you're usually in a control mechanism to try to reduce and contain that population. All the research consistently shows prevention is your best, most cost-effective tool. To have effective prevention or quick response, you need to be organized ahead of time across governments, have a good plan, and understand roles, responsibilities and resources because no forest pests recognize borders.

● (1125)

The other area we need to look at is that even though we might be talking more free trade or open trade, when it comes to forest pests you actually want more barriers. You want more barriers in place so that we're not bringing them in. We need the public to be aware so that the public can take action. Many of the forest pests are moved by people. Building on what Dr. MacLean said, partnerships are really important. Again, just like pests don't recognize jurisdictions, you have to work together on it. There's no sense us tackling one species in B.C. if Alberta is tackling a different species. We'll both be ineffective at it.

I have some recommendations on behalf of the council.

First, over top of everything else, we need to close the borders. You've talked about spruce budworm and mountain pine beetle. They already exist in the country. Dr. MacLean would be far more familiar with this, but a number of spruce budworm varieties exist. They're native to someplace in Canada. What's not native to Canada is the Asian gypsy moth, I think, or the pink gypsy moth. Those are all foreign to us. If we can keep those out of the country....

Some of them are established. The European gypsy moth is back east. It's not out west. Right now the Asian gypsy moth has been eradicated from Canada. If we let it come in, we're going to have the cost of trying to eradicate it and control it in the future. We need to close borders for sure.

We need to make sure that we have cross-border collaboration under way within Canada and across our borders. All the forest pests coming into the country are generally coming in through trade. They're coming in on cargoes, container ships, etc. Yes, there are trade implications. Wood packaging has to be treated. We have a lot of container ships coming in that could bring in the gypsy moth or other species.

We need to involve the forest industry. Working in partnership is really important, because the forest industry has a vested interest in the economic side. They can also be a lead in helping to reduce the spread within the country by adopting and implementing best practices. Many of them are now working under different forest certification programs. More and more of those certification programs are recognizing those best practices.

Firewood has been identified as one of the pathways, within Canada and beyond Canada, for spreading forest pests. Our council is working with Natural Resources Canada, CFIA, and other partners to make sure there's a national campaign to stop the movement of firewood. Yes, it applies to regulated areas for specific pests that Environment Canada or CFIA has regulated, but it also applies outside of that area. In the same way we see people recycling now, we're looking to have people handle firewood responsibly in the future.

Across Canada there are different regulations for different forest pests, and lots of places that don't have regulations. Again, federal, provincial and territory governments need to take a look at and understand where there are gaps in our regulations so that we can either close them or work around them. A big one for the council is making sure we have national information hubs. That's come out from every invasive species forum we've ever had. Can we have better national mapping so that people have access to knowing how far the spread of X invasive species is? Where is that forest pest? What's coming in from Washington or from the south?

Those national information hubs would also help involve people. For most invasive species, many times they have been reported by citizens, engaged citizens who have reported the weird bug in their backyard or the weird fish. Getting people to report invasive species is really important.

Definitely there should be investment in research, not just for the surveillance side but also to see what we can do if that pink gypsy moth does arrive in Canada—or the nun moth, which will make the gypsy moth look minor. If it does arrive, we need the tools ready to go.

I'd like to close with just a couple of comments. First, we need to be prepared. New Zealand and Australia are lead countries, often, in biosecurity. We have trade restrictions for wood packaging. We also have container pre-certification processes for containers coming into Canada by other ports checking them out. However, we don't have one of the tools New Zealand has, which is pre-certification for used vehicles. Used vehicles are actually a major transporter of invasive species. That's where your egg masses will hide, etc., and be moved over. So we could be taking a look at other countries like that.

● (1130)

Some of the tools they've used in the south include having all partners contribute to the biosecurity of the country. The federal level, states, industry and importers—the trade—all contribute to the biosecurity around those countries. Those will be tools, because resources will always be an issue.

I want to close and thank you in particular for putting this on your agenda and recognizing that forest pests are a big issue for Canada. I thank you for having the time.

The Chair: Thanks to both of you.

Mr. Whalen, I think you're going to start us off.

Mr. Nick Whalen (St. John's East, Lib.): Thank you, Mr. Chair, and thanks to both of you for coming.

It's a very important and interesting topic, especially as we're dealing with crises, but I'm wondering about this as I look over some of the data we've received about the amount of money that governments are spending on this.

It really seems to be crisis management all the time, rather than some type of an ongoing process in which governments interact with the forest in a managed fashion so that we could manage all of these pests continually forever, but then I wonder if we would be going the wrong way again and going too far, perhaps not with the invasive species side, but certainly with the spruce budworm.

Dr. MacLean, should we be managing these pests in the way we're managing them? Or should we say, well, we've identified that it's coming in here, so why don't we clear this stand in a fashion and extract the economic value we can from this stand before the pest moves in, and then just manage it as an economic loss, rather than always trying to maximize the future value of something that nature won't let us do?

Prof. David MacLean: That's a good question. Thank you.

Part of the difficulty is the scale. If it were small, isolated areas, I think we could do what you say. We could go in and do it, but look at just the province of Quebec, where the outbreak started in about 2005-06 in the north shore, north of Baie-Comeau, and got bigger and bigger, so that by 2017 it was in 7 million hectares. It's now 8.2 million hectares based on their surveys this year. Even with all of the salvaging that they can do, there's no road access in the north and it's just impossible to harvest there.

The Province of Quebec is spraying insecticides to try to keep trees alive. That's their approach. It's gone beyond where an early intervention approach would work. They're doing about 250,000 hectares or something of that order out of the 7 million or 8 million hectares that are there.

Salvage, harvesting and restructuring the forest are integral, along with some use of insecticides. The three can be merged together with an integrated long-term planning approach, so that you're using harvesting to reduce the vulnerability and using salvage in some places and insecticides in others. We've done that in other provinces.

Mr. Nick Whalen: Maybe that's a good place for me to interject, Dr. MacLean.

It seems like New Brunswick is moving down that role, and that through the Healthy Forest Partnership you have, there are ways in which you're already doing that. You're testing early intervention and small-use pesticides and whatnot.

Is there any clearing and harvesting or selective harvesting that you're doing in connection with this program? Or are you really just piloting and testing early interventions with insecticides at this stage?

Prof. David MacLean: I think the harvesting tends to try to target the older balsam fir anyway, the most vulnerable species. J.D. Irving is the company that's the most active in terms of planting. In some of their privately owned land bases they've really targeted switching the balsam fir into spruce, which is less vulnerable and more productive. On their Black Brook district land base, they've done that for most of the areas.

If there's a lot of balsam fir there, it's hard to get rid of it all, so pre-commercial thinning of young firs is also done in some other areas. It makes it less vulnerable, but not non-vulnerable. I think it is being used.

● (1135)

Mr. Nick Whalen: If New Brunswick and the companies are already doing this and trying to actively manage the forest, at least on the private lands, what role does the federal government have to play in stepping into that relationship?

Prof. David MacLean: What we're trying with this early intervention strategy of the Healthy Forest Partnership couldn't happen without the federal government. It couldn't be afforded. I think the role, both from a research perspective internally in Natural Resources Canada.... Our group has over 30 scientists working on a whole variety of projects. There are 10 different projects going on that I haven't spoken about and that NRCan is helping with.

The funding is helping to do the level of treatments that are required. We're projecting up to 550,000 hectares of treatment two or three years from now when it reaches the peak of the outbreak. It depends a bit on what happens in Quebec and how many moths get exported south into New Brunswick. There was a really bad case of that in 2016. We got off easy this year. It helps if they're not exporting moths to us. Actually, they sent some to Newfoundland this year, it appears.

Mr. Nick Whalen: Maybe we should make sure that the Healthy Forest Partnership is engaged there to do early intervention.

Prof. David MacLean: Do you mean in Quebec or in Newfoundland? They are a partner in Newfoundland, so it's Atlantic-wide. Right now the activity is in northern New Brunswick but both Nova Scotia and Newfoundland are active and participating. We had a meeting earlier this week where there was discussion from Newfoundland that they may have some areas to treat in the upcoming year.

Mr. Nick Whalen: Ms. Wallin, in a similar vein, right across the country invasive species will be coming all the time, not just on the tree pest side but on other plants and in the oceans. What national sustainable funding currently exists for organizations like yours, and where would it be coming from?

Ms. Gail Wallin: I don't think there has been targeted federal funding on a large scale for organizations like ours. Environment Canada provides us some money or the provincial governments do, but I think what you're driving at is where it should be funded. Is that what you're asking?

Mr. Nick Whalen: Well, your job or the job of your organization doesn't end tomorrow. There is no one crisis and once it's solved.... This is a continuous problem that exists as long as there is international trade and climate change. What type of stable program funding is in place to make sure that your organization continues to do its work indefinitely?

Ms. Gail Wallin: There isn't stable funding and there probably never should be one single source of stable funding. It has to be done through partnerships, federal, provincial and private. That's the model our council is striving towards. We're not there yet.

Mr. Nick Whalen: Who are some of your private partners?

Ms. Gail Wallin: Our private partners have come through industry, like the horticulture industry, but not on the forestry side yet. We're just courting a couple that I won't name right now that are working with us on the firewood side. We're hoping that those will be funders. For the large-scale industries, from J.D. Irving to Canadian Forest Products, by reducing the movement—in our case, firewood is an example—it will actually be a tool to help them. Just like your healthy partnership model where you have federal, provincial and private, that model needs to apply to the work that we do.

Mr. Nick Whalen: That's it for my time. Thank you so much.

The Chair: Mr. Falk, you're next.

Mr. Ted Falk (Provencher, CPC): Thank you, Mr. Chair, and thank you to our witnesses. I've enjoyed listening to your testimony thus far. You are obviously very passionate about your work and you are also very knowledgeable and I appreciate that.

Ms. Wallin, I'll start with you. You've talked about natural or domestic species and the more invasive ones. What is your opinion on some of the more domestic species that we have, like the mountain pine beetle. Are there ways to eradicate it?

Ms. Gail Wallin: There are two things: Native species such as mountain pine beetle, such as budworm, are native to some places in Canada. Their range has expanded. It is totally linked with climate change, with wind patterns, etc. I don't believe there is a goal in Canada to eradicate any species. That's not in keeping with our biodiversity thinking. We want to maintain them, but what happens with native species like this is they hit a peak cycle and they will really explode. Part of that is linked to forest management, and why they have exploded may be due to lack of forest fires or too many forest fires or whatever. I come from a world where there weren't enough fires and now we have them in spades. Those are our tools. When you're hitting native species and they have economic and biodiversity impacts, like the two you've mentioned, it's more of a control issue. How can you reduce their impact? You're not trying to eradicate those. With foreign ones, you're trying to prevent them and then eradicate them, so you don't have the same economic impact.

● (1140)

Mr. Ted Falk: Is there any benefit to any of our species, like the mountain pine beetle? The discussions so far have been completely from the perspective that there is nothing positive about the mountain pine beetle. Is there anything positive?

Ms. Gail Wallin: I would have to answer that from a biodiversity side—and I have Dr. Cannings beside me, I'm sure he would speak up—all native species have a role in our natural ecosystems. Taking any of them out, mosquitoes being the obvious ones that we always complain about, they have a very functional role.... What we're dealing with is that we've seen explosions of some of our forest pests, largely because of... it could be partially the weather but the part we have control over is our forest management, our fire protection. We can change those things to minimize the upscale or the outbreak levels. Our Canadian council has not called for the eradication of any native species.

Mr. Ted Falk: Okay, that's very interesting, thank you.

I would just like to ask for a little bit of clarification. What is the Canadian Council on Invasive Species comprised of? Mr. Whalen was asking a few questions in that regard, but how did you start? Did industry decide to put a council together?

Ms. Gail Wallin: No.

Environment Canada had triggered a national invasive species forum in Ottawa 10-plus years ago. The question then—to build on what's called a national alien invasive species strategy for Canada, which was led by Environment Canada—was, what more did Canada need?

One of the top recommendations that came out of that was the call for a non-government national voice for invasive species. This is what it should look like, and this is what their mandate was. That was put together and brought back to another national forum over the next year or two following that. The federal and provincial governments were very clear in saying, "We need something outside of government to complement our work inside government." Obviously non-profits like us have no authority, but we have the ability to influence in a different way.

Mr. Ted Falk: What authority do you have when you detect it?

Ms. Gail Wallin: None. We don't want authority. You have lots around this table.

Mr. Ted Falk: What is your course of action when you identify a problem?

Ms. Gail Wallin: I'll use an example from British Columbia that I'm personally familiar with. There is a brand new beetle—it's an urban forest concern—called Japanese beetle. We held a workshop and brought attention to it. The call for action was to have a multi-party committee that would respond to it. It brought together federal government, provincial government, the industry, local government, and indigenous to ask, what more do you want to do about this Japanese beetle?

That's the role of a non-profit organization. Sometimes we can facilitate an action. That's easier for us to do. Sometimes we can bring in and hold dollars outside of government, which are easier to spend. We've done it—held money that can be spent and isn't tied to fiscal year end, because that beetle cycle might not tie in to March 31 too well.

Mr. Ted Falk: It doesn't always work.

Ms. Gail Wallin: No, it doesn't work so well. That's where we can help out.

We can engage Canadians in a different way than governments can. It's quicker for us to respond on our website. It's quicker for us to respond to people than, often, governments can. That's just life.

Mr. Ted Falk: Do you find that you have sufficient engagement with the stakeholders and with decision-makers, both private and government?

Ms. Gail Wallin: There's way more that we could do.

In the last five years, invasive species have become a much more high-profile issue in government and industry. I think the path forward is big, and there's still lots of work to be done.

Mr. Ted Falk: Thank you, Ms. Wallin.

Dr. MacLean, in your presentation you indicated that 2% of landowners don't want help with an infestation of spruce budworm. How do you deal with that, or don't you want to deal with that? Are you happy with that?

Prof. David MacLean: We've put a lot of effort into trying to communicate what we're doing, why we're doing it, how we're doing it, and the consequences of not doing it. Under our provincial regulations, any landowner has to be contacted and has the opportunity to opt out of any of our treatments. We've been working with that.

This past year, I think we had about 400 individual woodlots with budworm on them that we wanted to treat. In some cases, we've had people opt out in one year and then decide to opt in again in a subsequent year.

● (1145)

Mr. Ted Falk: Can you tell the committee why they would opt out?

Prof. David MacLean: Sometimes it's because they don't like the current government, or they don't like any government, or they don't want any meddling, or maybe they're ultra-concerned about any sort of pesticide use. That would be another thing.

We go to great pains to try to explain that the pesticides we're using.... Bacillus thuringiensis is a naturally occurring soil bacterium that's cultured. It's not a poison. The insect has to eat it. It's the same thing with tebufenozide. It's a growth regulator that's specific to budworm. It's a much easier sell than in the days of DDT or chemical pesticides, but some people don't want anything.

Mr. Ted Falk: They are private landowners.

How about when you're dealing with provincial or federal landowners? What's their response, typically, when you have identified an infestation and you'd like to do something about it?

Prof. David MacLean: We haven't come up across national parks yet. We haven't had any budworm in them. In New Brunswick, we have Kouchibouguac National Park and Fundy National Park, and we're starting some discussion with them. That may be an issue. We would try to convey the consequences—what would happen to their forests if we don't do anything, and why we're doing it.

We came to an issue with protected natural areas in New Brunswick, where there's a scientific advisory board for that. Normally these areas would be set aside and nothing would be done to them. There were some issues about the idea that we're not letting budworm run its normal course within them. The regulations are such that the provincial minister makes a decision on that, and he has opted to have treatments conducted in protected natural areas. We've had a lot of issues trying to talk to their scientific advisory board to get their input and explain why.

Mr. Ted Falk: Thank you.

The Chair: Mr. Cannings, over to you.

Mr. Richard Cannings (South Okanagan—West Kootenay, NDP): Thank you both for coming here today. It has been very interesting. I learn a lot at these committee meetings. I learned from Dr. MacLean. I know that, in British Columbia, the western spruce budworm eats Douglas fir and now, I find that the eastern spruce budworm eats balsam fir. I would ask you why it isn't called the fir budworm, but I wanted instead to go to your comments about forest resilience, planning for the future and perhaps talk about a federal role there.

As Ms. Wallin was saying, in British Columbia, we have the mountain pine beetle epidemic that has radically changed our forests and the future of our forest industry. Not only did it kill a lot of trees, but the salvage operations afterwards produced a lot of clear-cuts. I'm sure a lot of those clear-cuts are being replanted to lodgepole pine instead of a mix.

There was a lot of concern registered by forest scientists, at the time, about what these forests would look like in the future, if we continued that salvage the way the plans were. As you know, lodgepole pine is a seral species that harbours all these young firs and spruces, which may be 80 or 100 years old sometimes. When we clear-cut the dead pines, we lose 50- and 80-year-old very diverse resilient forests underneath.

Could you expand on your ideas about the silviculture aspects of that? How should we be planning for the future, with how we design what we're planting, for the biodiversity of those forests and how that might help us with future insect infestation?

Prof. David MacLean: That's a good question. I think the answer to your question comes from understanding the successional patterns that are associated with different levels of outbreak and the relation of species to site characteristics.

Within our project, there has been quite a bit of interest in looking at beneficial effects that have been observed with having mixed species, as in hardwoods mixed in with balsam fir. We've seen it over and over again, when we have a Ph.D. student determining the mechanism of it, but it seems to be associated with parasitoids and a richer parasitoid diversity in these mixed species. Some of them require other hardwood alternate hosts in that, so there is definitely a benefit of that.

We've found that it occurs not only within stands, but it also occurs across landscapes. If you have a plantation that's next to a mixed wood stand, there may be a benefit, within a certain range of that.

Planning the forest landscape also gets into products and what you're trying to grow and what you're going to use them for, so that partly has to be considered, as well as planning for diversity across it and trying to cultivate that. One of the things that you would try to do is alter the age-class distribution, as well as the species composition, on a landscape basis.

There have been lots of theories about that for decades, but as I indicated on my last recommendation, it's very difficult to do on a meaningful scale because it really requires a large landscape. I think that is where one of your recommendations could be to try to facilitate that through partnerships in different regions across Canada with different forest pests.

● (1150)

Mr. Richard Cannings: In terms of changing the age-class distribution, I assume that would be a move away from bigger clear-cuts and more to selective harvesting in smaller patches or something like that. Is the Forest Service doing research on those sorts of long-term things? I understand what you mean about planning for the economic end of things. Most mills in my riding are keyed in on certain species, so they don't want other species to be grown. They're keyed in on pine or they're keyed in on Douglas fir. Is the federal government doing that? Forests are a long-term thing. I think this is where the government could play a role.

Prof. David MacLean: There may be some of them. I think there could be more. Part of the difficulty is that it can't just be the federal government. It has to be in partnership with provinces and with whatever industry is the licensee for that land area, and they have to buy into it together, but I think it could be facilitated through the federal government.

Mr. Richard Cannings: I'll move to Ms. Wallin.

You mentioned the gypsy moth several times. I know you said we don't have the gypsy moth in B.C., but every year we do have a few.

Ms. Gail Wallin: Right. I correct myself. It's not established.

Mr. Richard Cannings: No, it's not established, and I know it gets hit as soon as it's found. Is that something that your group coordinates across the country? Is there a gypsy moth team? How does that work?

Ms. Gail Wallin: There are two gypsy moths of particular concern. The European gypsy moth has been eradicated, led by the provincial government. That's been effective for 20 years or so. Every year they take action, and this year it involved a lot of work on Vancouver Island that was new. They lead that.

The Asian gypsy moth is a regulated species, and that program is lead by CFIA. Our organization has not been involved with that because those two species are being.... The Asian gypsy moth is regulated as not in Canada right now. It was found in Toronto and has been removed. We're considered free of it right now.

Where our organization would be involved, related to using the gypsy moth solely as an example, is calling on.... One of the roles for the federal government is to try to keep out the Asian gypsy moth, the pink gypsy moth and keep more moths from coming in. We have examples of the Asian gypsy moths coming in on container ships. The federal government only does a certain percentage of inspections on container ships, and when you find it on 3% or 5% of the ships you inspect, you know you've missed a lot of them, and that's where it's coming in.

Again, we advise closing that border so we don't get those moths in.

The Chair: Thanks.

Ms. Wallin, if you think that gypsy moths have been eliminated in Ontario, I'd invite you to come sit in my backyard in July.

Ms. Gail Wallin: The European gypsy moth you have established here in the east in spades. You don't have the Asian gypsy moth yet, nor do you want it. I think it's the European one you've got in spades out here.

I'm going to have to watch my wording here.

Voices: Oh, oh!

The Chair: Mr. Tan.

Mr. Geng Tan (Don Valley North, Lib.): Dr. MacLean, I want to ask a question about pest management.

You just mentioned that a private owner can choose to opt out of any management plan or early intervention strategy. It is my understanding that the responsibility of forest pest management in Canada depends on the nature of the pest and the location of the outbreaks.

Does forest ownership alone determine this responsibility? If so, are the federal, provincial or municipal governments responsible for pest management within their specific jurisdictions? What about private forest owners? Maybe they are responsible for their own forest. As mentioned, what if they are not happy with somebody and they just stand there and watch the forest pests spread into other areas?

● (1155)

Prof. David MacLean: It depends on the pest, on the insect, I guess. If it's an invasive insect, then there are roles for the Canadian Food Inspection Agency and Natural Resources Canada. If it's a native insect in the forest, there's probably a provincial government role, largely, in determining what's done with it. If it's within a municipality, there's a strong municipal role.

I was discussing the specific case of the spruce budworm and our early intervention research project. In the past, if it was spraying insecticide to try to keep trees alive in a reactive mode, it probably would be concentrated largely on Crown land, provincial Crown land and on industrial land and less so on private woodlots, but maybe somewhat on that. It depends on the insect.

Mr. Geng Tan: This is an extreme example, but what if I own my land or my forest and tell the provincial government to just stay away from my land?

Prof. David MacLean: In the New Brunswick situation and under New Brunswick regulations, you're allowed to do that, and the government cannot oversee that.

I teach fire management in one of my undergrad courses, and I always hold up the example of the State of Florida. The state has the ability to go onto private land and do prescribed burning in order to control fuels on it. That is pretty extreme from the standpoint of Canadian private ownership rights.

Mr. Geng Tan: Thank you.

Ms. Wallin, this is just for my curiosity. I asked the question about invasive species a few days ago to another witness, but I don't think I got a good answer, so I want to ask you.

Can you share with us one or two good, successful examples where those invasive species were effectively destroyed or controlled within their area?

Ms. Gail Wallin: I think a success is the Asian gypsy moth, which we've actually been able to eradicate from Canada. It's been detected in Canada. It's been detected in B.C. and Ontario. It was detected in the Toronto area. However, with federal and provincial governments working together, that's been eradicated. So, there's a moth that didn't become the European gypsy moth that we do have in the east.

Another success story around gypsy moths—there are a lot of other examples—is the European gypsy moth in B.C. because who would have ever thought...? Twenty years ago, they used to spray with D6 over whole big swaths of areas. There was a reaction on Vancouver Island this year when they went to spray because it's aerial spraying. However, the provincial government has sprayed for years, and we do not have established European gypsy moths in B.C.

Those are success stories, and I think we have to build on those successes because keeping them out is by far the best step rather than chasing them.

Mr. Geng Tan: It's very good to hear this success story.

How much damage has the gypsy moth caused to the forest compared with other native or invasive species?

Ms. Gail Wallin: I didn't come prepped with those numbers. The European gypsy moth established in Ontario has caused major economic damage, which is why the B.C. government's fighting hard against it. In comparison, the European and the Asian gypsy moths —and remember on the back door is the pink gypsy moth also— target a lot of the economic tree species, so they will have the biggest impact. What's different about those species versus things like spruce budworm or mountain pine beetle is that, historically, in a well-managed forest, they wouldn't have as big a high cycle as the one we're hitting right now. When the European gypsy moth, or whatever, comes in, it doesn't have any natural predators, so that's why we're always concerned about it. It's not the next mountain pine beetle of the west.

● (1200)

Mr. Geng Tan: I note that in addition to NRCan there are also other government agencies. There's the Canadian Food Inspection Agency, the Canada Border Services Agency, Health Canada and so on. How well do these agencies or departments communicate with each other?

Ms. Gail Wallin: There needs to be more done, but there definitely is, within governments now, the FPT—federal, provincial, territorial—model around invasive species, around the forest pest working group. There needs to be more, and there needs to be more collaboration with outside organizations. Even though we don't have authority and responsibilities, we do have the ability to be complementary and really help. It's great to have that because we didn't have that 10 years ago, but we need more.

Mr. Geng Tan: Who's overseeing this FPT model?

Ms. Gail Wallin: The national invasive species committee is chaired by Environment and Climate Change Canada with a province. The forest pest working group is chaired by NRCan, and I think it's with a province, but I'm not positive on that. Those are two models. The forest pest working group, which is specific.... Probably most provinces are involved; some of them are more involved than others.

Mr. Geng Tan: So, there's still a need for NRCan and Environment and Climate Change Canada to work together, to share their information.

Ms. Gail Wallin: Absolutely, along with CFIA. However, the big player that's probably silent on that list that we just talked about is the Canada Border Services Agency. It's the one that needs to stop them at the border.

Mr. Geng Tan: Thank you.

The Chair: That's all the time we have for this hour. I appreciate your taking the time to join us today and provide very valuable information for our study.

We will suspend for five minutes or less.

• _____ (Pause) _____

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• (1205)

The Chair: We're going to get under way again here.

Mr. Chubaty, thank you very much for joining us today from Yellowknife. We are about to start an hour of evidence with you as our witness.

Members, I am asking for your consent. I understand our witness has one image that he'd like to use. It's in English only and it will be translated later. After the fact, we'll get it in French.

Does everybody agree?

Some hon. members: Agreed.

The Chair: Mr. Chubaty, the floor is yours.

• (1210)

Mr. Alex Chubaty (Spatial Modelling Coordinator, fRI Research, Healthy Landscapes Program, As an Individual): Good afternoon.

Since the late 1990s over 18 million hectares of pine forests have been killed by mountain pine beetle in British Columbia. Beetles from these high-density populations in B.C. have expanded eastward and northward, over the Rocky Mountains and into Alberta, into forests that have not historically had mountain pine beetles. You can see from the figure I've provided here. This is an overview map of the three western provinces, so B.C., Alberta and part of Saskatchewan. The yellow, orange and red colours show the damage done by mountain pine beetle. You can see that it's primarily focused in British Columbia, with some substantial damage in the western portion of Alberta. In the green, you will see the availability and the distribution of pine. This is Jack pine, lodgepole pine and hybrid lodgepole and Jack pine that makes up the B.C./Alberta forests, and the Jack pine continues eastward into Saskatchewan.

Also on that figure you'll see a red line that cuts through Alberta. That is the leading edge of the mountain pine beetle invasion as of about 2012. This is fairly similar to what that leading edge looks like today. It has shifted a little bit, but this gives you a good understanding of the current situation.

This range expansion of the mountain pine beetle threatens the Jack pine ecosystems of Alberta's eastern boreal forest and it definitely has the potential to continue its eruptive spread through Saskatchewan and beyond.

The principal drivers of this outbreak have been two major factors. The first is a warming climate. We have less harsh winters, fewer stretches of below -35° or -40° Celsius, which is needed to kill those beetles over the winter. The other part of that related to climate is that those trees become very water-stressed during the summer, which makes them susceptible to beetle. There's also more development time during the summer months and into the fall, which allows those beetles to make it through the developmental stage they need in order to survive the winters.

The second principal driver of mountain pine beetle expansion is the abundance of mature pine on the landscape. A big part of that has been management decisions, and in particular fire suppression, which has allowed these stands to mature, and we have uniform-age pine stands across much of this region.

What can we do about pine beetle? Well, Alberta does conduct extensive aerial surveys annually to monitor and detect eruptions. They also engage in direct control, which is aimed at manipulating beetle populations to try to reduce them so they become more manageable. There are also indirect control measures, which are aimed at reducing the number of susceptible host trees on the landscape.

These strategies, as part of a data-driven management policy, can work to reduce the levels of tree mortality due to mountain pine beetle down to acceptable levels, but these methods will not necessarily suppress or eliminate the outbreak. They can, though, be effective at slowing the spread of this species.

We do know from work in British Columbia and Alberta that beetle suppression treatments are density-dependent. That means that in areas with very high beetle populations, it is much more difficult to get effective control and to have a meaningful impact. These are the areas obviously in British Columbia but also in the western portion of the province of Alberta, which I'll refer to as the "hind-flank region". Along the leading edge, which again is that red line in the figure there, beetle densities are much lower, the pine densities are also a bit lower, and that makes it lot easier and a lot more effective to take control measures in that region.

• (1215)

Alberta has been very effective at aggressively monitoring and controlling for mountain pine beetle, not only throughout the province but also with monitoring into Saskatchewan. They have taken a zoned approach, so they are treating the populations in the hind flank differently from the populations that are along that leading edge, and that has shown to be a very effective strategy.

They are monitoring beyond the leading edge, eastward and northward, and they're doing active suppression along that leading edge zone where the density of beetles is much lower. They've shifted to mitigation and adaptation strategies in the hind flank regions.

The work of Dr. Allan Carroll of the University of British Columbia has shown the efficacy of Alberta's strategy. We see approximately two-thirds of the new green attack being identified by these aerial surveys, and about two-thirds of those identified attacks are then controlled and those trees are removed and destroyed. That has led to approximately 40% to 44% reduction in the infested pine on the landscape.

However, Alberta's financial resources are currently constrained for resources for their operational costs in order to support and maintain such an aggressive management strategy.

My recommendations here for the federal government are to, first, continue this approach that Alberta and Saskatchewan have collaborated on to slow and contain the spread of the mountain pine beetle. The goal here would be containment rather than total suppression of the population because the numbers are just too high in the western portion of the region for total suppression to be likely or feasible.

Alberta's data-driven approach aligns very well with an adaptive management framework, which takes an iterative approach to decision-making. We take management actions, we evaluate those outcomes, and we tweak the formula as we go. This sort of process repeats itself and has proven to be very effective in Alberta. This really is the best way to deal with the uncertainties associated with the spread of the beetle and it is likely a useful strategy for other forest pests as well.

We have an opportunity here to operate in a reactive capacity, as we have been doing, responding to outbreaks as they occur, but we also have an opportunity to be proactive in order to watch for new outbreaks as they occur—so monitor along the leading edge and beyond—and then also to suppress flare-ups as they happen. It may be possible to do some indirect control to try to reduce the amount of susceptible pine that is on the landscape.

The second recommendation that I have here is to develop a national plan to coordinate the effort for controlling the eastward and northward spread of pine beetle. This strategy needs to be flexible, following that adaptive management approach I have described. I believe the federal government should be contributing an operational cost to the Alberta and Saskatchewan initiative.

I also believe we need to see increased engagement and integration from researchers from all different disciplines and stripes from within the government as well as with universities and other researchers. There is a lot of untapped potential here. Not all of those researchers and agencies have been at the table discussing these options and it's really important that we facilitate and support an integrated systems approach. By that I mean that we look to experts in the fields of insect biology, fire ecology, vegetation, carbon, wildlife, economists, etc.

What we really need to be doing as we move forward to help build the resilience of our forests is to have an integrated approach and an integrated pest management strategy.

The mountain pine beetle is the canary in the coal mine for a lot of other forest pests, but we have a leg up in this particular battle because of the extensive history with the beetle in B.C., and now in Alberta, and we have effective control measures.

We definitely can find a way forward and I believe that Canada has an opportunity to become a world leader in eruptive forest pest management, one that promotes a resilient forest in the long term.

Thank you.

● (1220)

The Chair: Thanks very much, Professor.

Mr. Peschisolido, you are going to start us off.

Mr. Joe Peschisolido (Steveston—Richmond East, Lib.): Thank you for that very helpful presentation.

Earlier on in your presentation, you discussed the two leading drivers of the infestation. Can you talk a little bit about climate change and how it impacts on the infestation and our ability to deal with that?

Mr. Alex Chubaty: Climate change, in particular the warming, has resulted in two things from the perspective of beetles biology. The first is those overwintering conditions. Typically, when we get good long stretches of below -35°, -40°, for several days or weeks at a time, that is really effective at killing those beetles during the winter. We typically see high mortality rates in those cold conditions.

However, we haven't been getting those types of cold winters. As a result, those beetles are relaxed from that factor, and we end up with larger populations come summer.

The other factor is that the warmer climate is putting on a lot of moisture stress. It's a lot drier. Those trees have reduced capacity to defend themselves against the beetle when they're water-stressed. That further contributes to the susceptibility of the forests.

Mr. Joe Peschisolido: You mentioned briefly that it was the abundance of mature pine and that it was due to managerial decisions. Can you elaborate a bit on that?

Mr. Alex Chubaty: There are a number of pieces that play into that, but the last 50 years or so of fire suppression in particular has meant that these forest stands are growing and they're becoming a uniform age class. We have a lot of mature pine, and it is this mature pine that is particularly susceptible to the beetle.

It's that mature pine that's really important for driving the erupted dynamics, because you get much larger population growth in those larger mature stands.

Mr. Joe Peschisolido: You talked about the importance of researchers, particularly at the university level.

What can the federal government do to be helpful in drawing them out and making them part of the solution?

Mr. Alex Chubaty: I'll use an example.

In Alberta, there was an initiative called the "TRIA-Net, turning risk into action". The Canadian Forest Service, CFS, was largely absent from that particular group. That is definitely an indication to me that the federal government needs to bridge the union with university researchers, with private industry, and make more of an effort to bring everybody to the table.

As I mentioned, there is a lot of expertise, not only within the Forest Service but throughout the federal government, in all of these issues, not just the ecology of insects, but forests and forest health in general.

Mr. Joe Peschisolido: An indication of the enormity of the problem is that, as you mentioned, the goal right now is containment not suppression.

Why is that, and what could we change to have the goal be suppression?

Mr. Alex Chubaty: The main reason is that the beetle numbers are massive, especially in the hind flank. It really is a matter of just being too late to the party. It is difficult once those beetles have established themselves. You have such large populations that it becomes really difficult and unfeasible to enact control methods that will bring the populations down low enough. In those hind-flank regions in particular, the goal needs to be just mitigation.

We still want to do some control to try to minimize the risk of some spreading out of those regions, but the bulk of the work along the leading edge is where we're going to see the most tractable gains. That's where we're going to be able to suppress the beetles low enough because the densities are already low to begin with.

● (1225)

Mr. Joe Peschisolido: Within the context of your integrated approach to dealing with the problem, where do you see the federal government?

Mr. Alex Chubaty: I definitely see the federal government as facilitating that. The federal government does have an opportunity here to coordinate with the provinces. Obviously, the provinces manage their forests. Those decisions, those policies, are their own to make.

It is important to provide operational resources in order to enact control measures, but it's also useful, like I mentioned, to ensure that experts from all levels are involved in the process.

Mr. Joe Peschisolido: Are there any other elements of the recommendations that you'd like to focus on?

Mr. Alex Chubaty: No, I think I'll just reiterate that forest pests are a major concern in relation to forest health. That is one particular value we care about, but there are also a number of other values that we need to simultaneously balance. I think that is why the integrated approach makes sense and should be geared towards the sustainable long-term resiliency of our forests—not just for traditional economic reasons but also for tourism and the ecological drivers that are part of this. It's important to look at all of those areas and all of those factors.

Mr. Joe Peschisolido: Thank you.

The Chair: Mr. Schmale.

Mr. Jamie Schmale (Haliburton—Kawartha Lakes—Brock, CPC): In terms of the national strategy, just to pick up on what Joe was talking about, we've heard in the last few meetings of a number of organizations doing some pretty amazing work regarding this issue, whether it be domestic or something more invasive, such as the Asian gypsy moth.

Other than government, is there another organization you know of that could take the lead and coordinate all these people, all these groups, and allow them to talk together? From what we've also heard in the testimony, the provinces are responsible for a lot of the actual work that goes into implementing any plan. Is there any other organization that you would recommend or that you think should be involved in this conversation, an organization that could maybe take the lead or bring people together?

Mr. Alex Chubaty: There are certainly several people. A lot of these groups have worked around the fact that the federal government hasn't been as directly involved with some of the more operational sides, or even with the research side. We have seen, for example, TRIA-Net emerge out of a need for not only doing research but also for implementing some of these management decisions and trying them out in the landscape. The forestry industry is definitely interested. Universities are definitely contributing to working on this problem. Even if the federal government weren't part of that, we still see that these agencies and these groups are coming together. They would really benefit, however, from some additional inputs from the federal government.

● (1230)

Mr. Jamie Schmale: When we talk about invasive species, I know most of your presentation was on one that is natural to this area. Is the Canadian government, or any other organization, working with other countries that are dealing with their problem? We heard in the last hour about how some of the invasive species are being shipped over in crates. Are we in conversation with those countries about how they are managing that situation and maybe bringing some of their practices here?

Mr. Alex Chubaty: I will just point out, because you used the term "invasive", that the mountain pine beetle is a native species. It's native to Canada and to this area but it is behaving a bit like an invasive species in how it's now shifting into the Jack pine stands in Alberta. Those trees have not had an evolutionary history with the beetle and don't have the same kinds of defences.

In terms of answering your question about other jurisdictions, I'll point to the United States. They're also dealing with pine beetles, certainly in Colorado, Idaho, Oregon and elsewhere. The situation is a little different in the States. Colorado is doing a lot to manage the beetles in their stands. Their forests are a little different from ours. There's a lot more ponderosa pine, for example, down in Colorado. They have slightly different management strategies but on the whole they're working on it as well.

I couldn't give you any numbers to quantify what this might look like but there is a risk that logs, say from Colorado, might be shipped across the border into Canada. If those logs haven't been treated by having the bark removed and/or heat-treated, these beetles could be brought in from other jurisdictions.

It would then be important to make sure that any such shipments are checked to ensure that they're following proper protocols.

Mr. Jamie Schmale: Right. Thank you for bringing that up. I don't know if you heard the last hour of testimony but it kind of ended on the fact that there should be more coordination at the border to ensure that those species aren't getting by. That goes exactly to your point.

Are there any recommendations you have for us on that point? We heard in the last hour a very small amount and obviously there's not enough people power to put that through. What recommendations do you have that could maybe help with this issue?

Mr. Alex Chubaty: I'm less familiar with the current regulations and restrictions in terms of cross-border shipments, for example, of logs. Legal requirements that mandate the removal of the bark, for example, would certainly be an effective way —or hopefully an effective way—to ensure that stuff gets processed before it reaches the border; before it's even shipped. When it is at the border, try to step up those inspections to verify that products being brought in have been properly treated.

Mr. Jamie Schmale: Do you know of any product or any use for that bark that would justify it being removed in Canada rather than in the United States?

Mr. Alex Chubaty: I do not, no.

Mr. Jamie Schmale: Okay, so it's not as if it's needed here or it could be put into something, value added or anything?

Mr. Alex Chubaty: My understanding is that people want the bark possibly for the aesthetic of having a log cabin built. You want the bark on there whereas stripped of the bark, those logs are potentially less aesthetically pleasing. Obviously that's not that important if removing bark means preventing pine beetles from getting into the country.

Mr. Jamie Schmale: Of course.

Thank you.

● (1235)

The Chair: Mr. Cannings.

Mr. Richard Cannings: Thank you, Mr. Chubaty, for appearing before us here.

I'm from British Columbia, so the mountain pine beetle is a huge issue, of course. I'm a biologist. I remember working in the Chilcotin back in the late seventies when we had what we thought was a big outbreak then, but it paled in comparison to the devastation of the late nineties and the early 2000s.

You talked about what set that up and the forest fire suppression. From what I understand, though, that monoculture was set up more than 100 years ago when settlers first arrived and burned vast parts of the landscape; and of course, lodgepole pine, being a species that comes in after fires, that created those big monocultures. Then we had the fire suppression.

I hear you talking about mitigation and adaptation in these areas where we simply can't control the beetle. However, in British Columbia we have a forest that's been radically changed from what it was 100 years ago. We have a forest economy that's been devastated.

The important thing I see is to look to the future and how we can avoid this happening again. Yet, the immediate reaction, of course, is to go in and salvage as much as you can as fast as you can, clear-cutting vast areas.

I had a friend who was a logger in central B.C., who was working full tilt there a few years ago in the midst of the salvage operations. He told me he had never cut so much spruce in his life. There, they were given cutting licences and clear-cutting areas.

So, we're left with these clear-cuts that used to be forests of leading spruce. Now probably a lot of them are being planted to lodgepole pine. At the time of that salvage, there were some concerns raised from the forest research community that we should be leaving as much of these areas as possible not to salvage, or at least not to clear-cutting, because there were all these young fern spruce growing that would provide a more biodiverse and resilient forest in the future.

I'm just wondering if you could comment on that and perhaps on what the plans are for Alberta. I think Alberta has a better chance at it because the Jack pine isn't something that normally occurs in these vast monocultures—or at least it doesn't in Alberta and Saskatchewan now.

Mr. Alex Chubaty: You're right. Certainly, the management decisions and the management strategies that have led to the situation in B.C. in particular are not just fire suppression—and that's a big piece of the story—but certainly the fact that we do have these uniform age stands is really the key point there.

Just having a monoculture, which would just be everything being a single species, that is less of a concern if there is a mix of ages. Typically, when you have fire coming through these forests, it does help provide some of that variation in age, which adds to the resiliency of those forests to these sorts of outbreaks.

With respect to the second part of your question, in terms of what we can now do, now that we have clear-cut large areas and we're replanting, I believe we need to be ensuring that when we go to replant we're not just putting back another monoculture and that it's not going to end up being a uniform age class, because that would set us up in another 100 years to go through the exact same problem again.

We really do need to be mindful of trying to plant mixed species but also of trying to alter, potentially, our harvest regimes so that we aren't just clear-cutting large swathes and we are leaving some residuals in order to have a nice mixture of growth in the forests.

Mr. Richard Cannings: Does your group mainly work in the boreal forest? Are you thinking further than mountain pine beetle impacts? Are you working on broader scale landscape issues, on things like caribou, on how we should be managing the boreal forest, on what sort of harvest practices we should be doing for the long term to reduce insect pests, deal with fire situations, and manage for biodiversity, including caribou, which we're hearing a lot about these days?

● (1240)

Mr. Alex Chubaty: That's exactly right.

I am an ecological modeller, so I work on simulating and forecasting landscape conditions and landscape changes in the boreal forests. Currently the groups I'm working with are engaged in looking at exactly those things you mentioned: that intersection between fire, the vegetation dynamics and the succession processes involved in regenerating the forest, and also insect outbreaks—mountain pine beetle, in particular—and then looking at addressing those other outcomes on caribou and other wildlife. We're definitely taking an integrated approach to that problem.

Mr. Richard Cannings: Do you think there is a solution where we can cover off all those bases? Is there a win-win situation?

Mr. Alex Chubaty: I believe so. I think we've definitely made a lot of good progress in recent years and we're getting a lot of interest from not only forest companies but also from, as I mentioned, government and universities where people are interested in coming up with these integrated approaches. We're in a situation where we just haven't had all of the opportunities to fund some of this work, but there is a lot of good research that has happened and is continuing to happen.

Mr. Richard Cannings: Thank you.

The Chair: Mr. Whalen.

Mr. Nick Whalen: Thank you very much for joining us today.

This map is really sobering. We see that probably 50% of all the forest in British Columbia is affected. Is that the right order of magnitude?

Mr. Alex Chubaty: Yes, it's about 50%.

Mr. Nick Whalen: Talking about just British Columbia for a second, how much of the forest will be replanted in a normal year in British Columbia?

Mr. Alex Chubaty: I would have to double-check the numbers. I don't know off the top of my head.

Mr. Nick Whalen: Would you have any sense of how much of the forest is harvested every year?

Mr. Alex Chubaty: Let me just double-check. No, I can't speak to that, unfortunately.

Mr. Nick Whalen: Is it even 1%?

Mr. Alex Chubaty: It's probably more than that. They certainly do try to replant after they've harvested an area.

Mr. Nick Whalen: No, but I mean is the amount of forest that's harvested even 1% of the British Columbia forest?

Mr. Alex Chubaty: Typically, you mean. I'm not sure. I don't know what the exact percentage is.

Mr. Nick Whalen: I'm just looking at this map and I'm asking why we are doing anything. This is a natural species. It's a cyclical thing. If you look south of the border in the U.S., you see they've had these things every couple of decades for eons. They still have forests. What do the forests in the U.S. look like that have a comparable climate to what we have now and would have had a comparable climate a hundred years ago?

Mr. Alex Chubaty: Although we have had these cycles, these periodic outbreaks, there's been nothing at the scale of what we've seen in B.C. and now in Alberta.

Just the magnitude of the outbreak is substantial, and obviously when 50% or more of the merchantable pine is taken out by the beetle, that obviously has severe economic consequences.

The risk is that—

Mr. Nick Whalen: But sir, it's not going away. This insect exists. It's there. It's attacked these trees. It's going to be a new ecology after this. Why are we trying to manage an ecology when we don't even know what it's meant to look like because climate change is happening and nature will take its course?

I'm trying to understand why we should not just in some sense leave well enough alone, because there's no way we can spend enough money to treat even a significant or a measurable portion of this vast area that we've talked about, so why don't we just leave well enough alone?

Mr. Alex Chubaty: You're right that we certainly can't go in and treat all the massive infestation in B.C. and that western part of Alberta, and that's why I said in those regions—

Mr. Nick Whalen: But even along that zone... I'm looking at that line. That line is thousands of kilometres long, the red line.

Not only that, it's not as if you can stop it, because the climate is changing, the planet is warming and these beetles are coming.

I'm trying to figure out why we are trying to manage a crisis that's unmanageable. Why isn't it better just to say this is what we see the forest looking like when this crisis has passed? Why don't we try to do a few things that will encourage the forest to get to that state a little sooner, so we can deal with the fire problem?

● (1245)

Mr. Alex Chubaty: In part it's because we can have a measurable impact, certainly along that leading edge. We can and we have been slowing the spread of the beetle eastward.

Mr. Nick Whalen: But it's going to spread. Is there any thought that we can stop it? You said we need -35° temperatures. Is there some line in the sand here where it can't cross?

Mr. Alex Chubaty: Weather and climate will obviously play a big role in this, but even in the last few years, that leading edge, the spread, has slowed a little, in part due to climatic conditions. It is possible, as some recent work coming out of Allan Carroll's lab and his group suggests, that if the densities are low enough right now along that leading edge, which they certainly are, we may be able to suppress those populations below the point where the outbreak can continue, so it may be able to be contained.

Mr. Nick Whalen: It just seems to me that there's no free lunch in this. We suppress the fire, we allow the trees to age, we get more bugs in the old-growth trees, and then they all die and there's a forest fire. I'm looking at this, thinking we're just suppressing the bugs so that the age of the trees gets higher so we're even more likely to have more bugs. It just seems as though the more we try to interfere with this process, we create a positive feedback loop that makes it more likely.

There's a lot of guilt associated with this, but just because we're causing climate change and we're creating this horrible problem, that doesn't mean that trying to address it the way we're addressing it is a good idea. It just seems that we're going to head to a new climate state, and maybe we should just be trying to plan and manage towards the new climate state rather than trying to protect something that simply doesn't exist. We're already 1.5°C beyond the climate that caused this forest to exist in the first place. I'm trying to wrap my head around why we're trying to protect the past that doesn't exist.

Mr. Alex Chubaty: In part, yes, we are trying to protect the forests, to keep them there. They obviously are a valuable resource for a large number of reasons. We are having meaningful impacts here. We are able to manage the forests.

I'll just reiterate that the goal is about long-term, sustainable, resilient forests. That doesn't mean we're going to just replant and get all these trees back up to being uniform, mature stands. We want to have a variety. We want to have that variation in the forests to keep these landscapes healthy.

Mr. Nick Whalen: Wouldn't nature just do that itself? If a forest fire comes in and wipes it out, then just over time the seeds will be dispersed by the wind, the bugs and the birds, and a forest will re-emerge, or will it not?

Mr. Alex Chubaty: There's no guarantee that a forest will re-emerge. We do know that with shifts in the climate, with shifts in soil moisture, these pine stands here, after large fire events, after large disturbances by mountain pine beetle or other forest insects and with the changes in the climate, may not come back as pine stands.

Mr. Nick Whalen: Sure, but maybe they're not supposed to come back as pine stands. That's the point I'm trying to make. What types of stands do they have in northern California? The northern California climate of 100 years ago was more like the climate of southern British Columbia now, so what do their forests look like? Isn't that what we should be managing towards?

I don't expect pine stands to come back here, because the mountain pine beetle would just eat them all.

Mr. Alex Chubaty: It won't necessarily do that if we take action. Certainly the types of stands that we have, that they have in the U.S., in California and in Colorado, where there's more ponderosa pine, are very different types of forest stands.

All those stands are still fire-driven ecosystems. Fire still plays a huge role on the landscape. Even if you said, "Let's let the beetles have their way with the trees", and they're going to march their way through, you still have this issue that the forests aren't in a state where they're going to be long-term resilient, not just to insect disturbance but also to fire and the change in the fire regimes that is coming and is already under way.

We need to do something, because we can't afford to just—

● (1250)

Mr. Nick Whalen: I'm not sure what we can do. In looking at this map, there are tens of thousands of square kilometres that can't be treated.

The Chair: Sorry, we're going to have to stop there.

Mr. Schmale, have you decided yet whether—

Mr. Jamie Schmale: It's Mr. Falk's time, actually.

The Chair: Okay. You have five minutes. You can split the time up any way you see fit. It starts now.

Mr. Ted Falk: Okay, thank you, Mr. Chair.

Mr. Chubaty, thank you for your testimony here. I've appreciated it and enjoyed listening to you.

I have a question about temperature. You've indicated that we need -35°C temperatures to kill the bug. Is that sustained temperature or to just hit that point?

Mr. Alex Chubaty: It would be sustained temperature. We need fairly long stretches of -35°C or -40°C.

Mr. Ted Falk: Do you mean "long" as in hours or in days?

Mr. Alex Chubaty: It would be several days to weeks.

Mr. Ted Falk: What are the chances we're going to get that in those yellow areas identified on your map?

Mr. Alex Chubaty: On the current climate suitability forecast for mountain pine beetle, there are a number of different models that have been developed to look at exactly this question. All of them basically suggest that in all of these areas, as we move into eastern Alberta and into Saskatchewan, into that boreal range, there's certainly going to be favourable climate for the beetles. It's definitely looking less likely that we're going to be getting those sustained cold temperatures.

Mr. Ted Falk: One other option that we've heard is controlled burns. What is it that kills the bugs? Is it the smoke or the fire?

Mr. Alex Chubaty: It would be the fire. I would just clarify, though, that typically prescribed burns, to use that terminology, is a method of indirect control that is really geared at making the landscape less susceptible to the beetles. It's a more proactive approach as opposed to the reactive approach of just going in, cutting those trees and then burning them.

Mr. Ted Falk: We've heard from previous presenters here that we don't want to eradicate the beetle, we just want to control it. Would you agree with that statement?

Mr. Alex Chubaty: I would agree with that, yes.

Mr. Ted Falk: In your opinion, what's the best way to control it?

Mr. Alex Chubaty: The best way, as I've outlined here, is to maintain this zoned approach where we really focus on suppression along the leading edge where the densities are low and where we know we're having a measurable impact. Then, in the areas that are already heavily inundated with beetles, we shift to a mitigation and adaptation strategy. We salvage wood where we can, but we do need to learn to live with the beetle.

Mr. Ted Falk: What method best works for suppression, in your opinion?

Mr. Alex Chubaty: They use a combination of methods. Once they have identified trees that have been attacked, they'll cut them, they'll burn them, or they'll strip the bark and burn that. They also use a combination of insecticides in order to control the beetle. Those insecticides are applied to the trees.

Mr. Ted Falk: Are these insecticides organic or are they synthetic insecticides? How effective are they? How cost-effective are they?

Mr. Alex Chubaty: They're manufactured insecticides, and they are effective at killing the beetle.

Mr. Ted Falk: Are they also cost-effective?

Mr. Alex Chubaty: I don't have the information for that at this time. I do know that we've been cutting the trees and then burning the wood as the control measure.

Mr. Ted Falk: Based on your modelling, is that red line the outer parameter of where you think the beetle would end up?

Mr. Alex Chubaty: That red line is, as of 2012, the leading edge for the beetle. As I mentioned, it has shifted a bit further east, but it looks similar to what you see on the map.

Mr. Ted Falk: As it travels further east, is it increasing or does it seem to be petering out?

Mr. Alex Chubaty: At the moment, it does seem to be slowing down. We definitely have slowed it, certainly since 2001. We've definitely seen a fairly steep decrease in the spread rates heading east as those beetles move through this section along the leading edge. There are also lower pine volumes, which helps. There are just fewer trees available, so right now that seems to be helping to contain it a bit. Once they get further east into Saskatchewan, the pine volumes increase.

● (1255)

Mr. Ted Falk: Okay, thank you very much.

The Chair: Ms. Khalid, you're going to finish us off for the day.

Ms. Iqra Khalid (Mississauga—Erin Mills, Lib.): Thank you, Mr. Chubaty, for your testimony today.

Please excuse my ignorance as this is my first time really delving deep into natural resources.

Canada is quite diverse in its ecosystems. Would you say that a species that is homed in the east coast would be considered an invasive species in, say, the Prairies, for example?

Mr. Alex Chubaty: This is an issue of terminology. The terminology we've been using to describe the mountain pine beetle is "native invasive". Although it's native to B.C., the forests that it's in now—in Alberta—don't have that history with the beetle, so it is behaving a bit like an invasive species on that front. Certainly we can use that terminology, "native invasive", to describe some of these things that may be native but are spreading into new areas.

Otherwise, in the typical language about invasive species, we think of those as coming in, typically, from overseas. That's the sort of terminology we tend to use.

Ms. Iqra Khalid: There are fumigation practices that occur when goods are brought into the country, or even when Canada ships goods to other parts of the world. Do we see similar practices to prevent species from one part of Canada impacting another part of Canada, or is this a new phenomenon?

Mr. Alex Chubaty: Generally speaking—certainly in the forestry sector—shipping and moving wood with the bark on is regulated. If you've crossed a provincial boundary in western Canada, I'm sure you've seen the signs that say not to bring firewood back into Alberta, or into B.C. There certainly are restrictions there, but obviously there's not a lot of enforcement for some of those particular things.

For imported goods, I'm not a hundred percent clear on exactly what is done to treat the wood that is coming in from, say, the United States. Obviously there do need to be guidelines in place for ensuring the wood is either heat-treated, or debarked or both.

Ms. Iqra Khalid: When it comes to sharing your research with the government bodies that would enforce and then provide regulations with respect to addressing the issue at hand, how do you share that information? Is it something that you just move up the chain, or is there some kind of process where your consultation is taken and a strategy is developed based on the research you provide?

Mr. Alex Chubaty: The direct output of the scientific research will be in the form of scientific papers in peer-reviewed journals. That's the primary output. Of course, there are also a number of reports and other documents that are provided to different agencies, be they governments or our industry partners. We disseminate results and information that way.

Where possible, we do try to work with the managers and decision-makers on enacting policies that address the scientific aspects, but that are also fine-tuned to the day-to-day realities of operational implementation.

Ms. Iqra Khalid: Thank you kindly. Those are all the questions I have.

The Chair: Thank you very much. That's all the time we have.

Professor, thank you very much for joining us. You've been very helpful and informative.

As for all of you, thank you for coming today. Have a happy Thanksgiving. We'll see you in 12 days.

The meeting is adjourned.

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